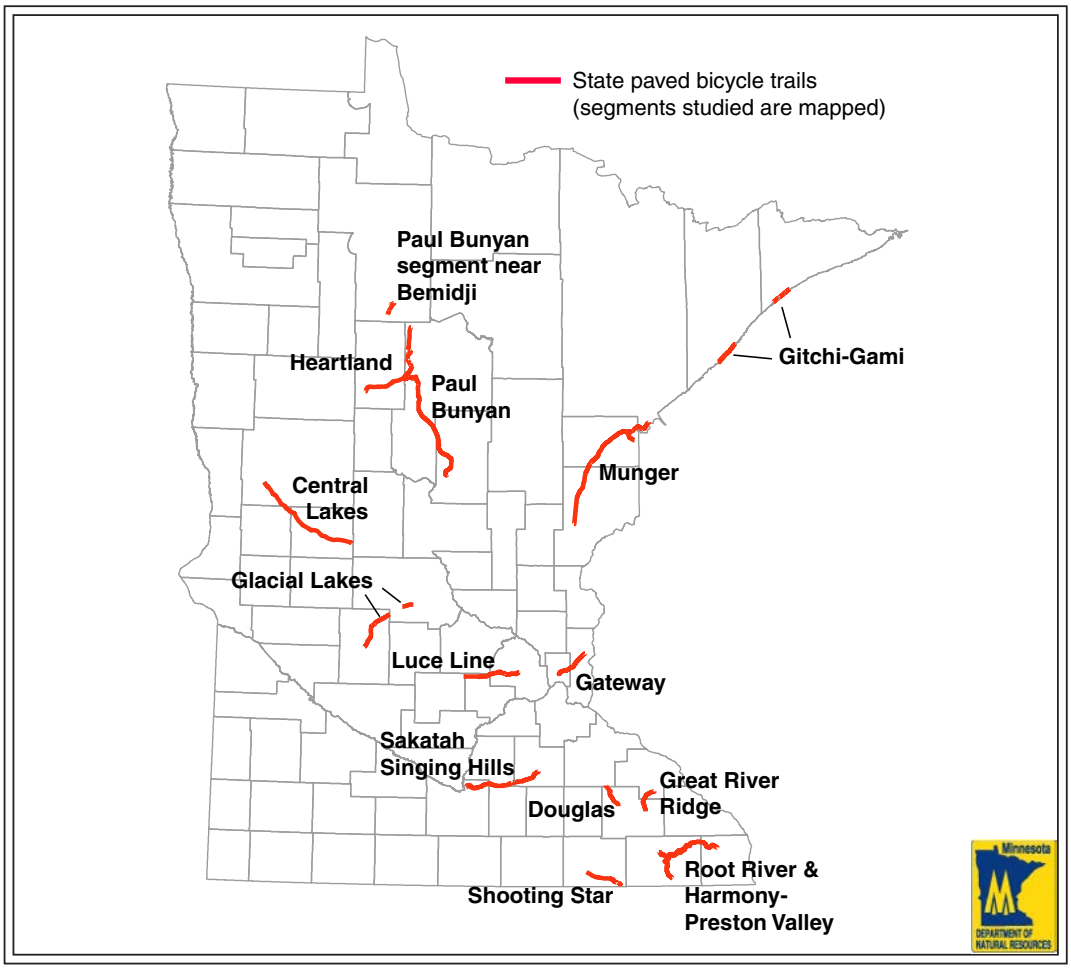
User Characteristics and Use Trends Since the 1990s on Paved State Bicycle Trails



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INTRODUCTION

In the 1990s, the Minnesota Department of Natural Resources conducted ten studies of off-road paved state bicycle trails, which at the time represented nearly all such trails (Reference 1). Bicycle trails are "paved" with asphalt or compacted aggregate, including crushed limestone; some of the trails have a parallel treadway with an unpaved natural surface. They are commonly referred to as "bicycle" trails, because they are non-motorized and biking is a primary activity.

Eight of the ten trails that were studied in the 1990s have been revisited since 2007, providing a fresh perspective on trail use and the characteristics of the user population (Table 1). An earlier report provided results from five of the eight trails with trend information (Reference 2).

This report is a summary of the findings from the full set of past and present trail studies. Attention is focused on both the current characteristics of summer trail users and on trends since the 1990s, the latter because trail use and trail users have changed.

Activity participation on state bicycle trails is a form of nature-based outdoor recreation, which also includes — but is not limited to — state and national park visitation, boating, fishing, hunting, snowmobiling, and nature observation. Participation trends in nature-based recreation are a concern, and this concern extends to state bicycle trails. After some 50 years of growth following World War II, nature-based outdoor recreation turned a corner in the 1990s, and is now exhibiting declining participation on a per-capita basis. The decline is broad based and national in scope (Reference 3).

Efforts to maintain or grow participation levels in nature-based recreation face two major challenges in Minnesota and across the nation (Reference 3):

Generational challenge: young adults (under age 45) and their children are not as involved in these activities as in the past; when extrapolated this trend leads to further participation decreases in the near future.

Race/ethnicity challenge: nature-based activity participation is concentrated in the non-Hispanic white population, which is expected to grow very little (if at all) in the near future; when the primary participant base is stable to declining, participation is difficult to maintain or grow.

State bicycle trail use faces both of these major challenges. Trail use has shifted from younger to older age classes, and non-Hispanic whites are consistently over-represented on the trails relative to population proportions. The non-Hispanic white population has largely quit growing in Minnesota, while the non-white and Hispanic populations — which are under-represented in trail use relative to population proportions — make up the bulk of population growth. These findings, among others, are detailed below.

The people using state bicycle trails have a great deal in common with Minnesota state park visitors, and there is undoubtedly a fair amount of participant crossover between trails and parks. They share similar demographic profiles and user trends. Thus, many of the recently reported findings for state park visitors (Reference 4) are reiterated for trail users in this report.

After a brief discussion of methodology, the results are presented as follows:

Characteristics of Minnesotans using state bicycle trails

Trends in trail use overall, and by trail activity, day of week, distance traveled from home to the trail, and age class.

METHODOLOGY

A trail study covers the summer season from Memorial Day weekend to Labor Day. A study has two components: counting trail users, and collecting user characteristics and opinions through a survey. The first component amounts to an approximation of "instantaneous" counts of users on trail segments. The counts are one hour or less in duration and are made by field staff traveling (on a bike or in a vehicle) the length of a trail segment; all trails have multiple segments. Trail users are counted by activity, including biking, walking, skating, running, and other activities. For the second component, the field person recruits users on the trail for the survey and obtains their name and address; a survey is then mailed a few days later, and a follow-up to nonrespondents is mailed some three weeks hence.

Both the survey and counting dates, times and places follow a statistical sampling plan. Sample counts are statistically projected to full summer use quantities in the usual way that stratified samples are expanded. Survey results are weighted by trail use, which ensures that results from one trail are not over- or under-represented when combined with results from another trail. Survey weighting is done by trail activity and day of week (weekends/holidays and weekdays).

Eight trails are included in the trend analysis for this report (Table 1). All eight share the same counting methodology in the past and present set of studies. The survey methodology for one trail study (Paul Bunyan in 1996), however, is inconsistent with all the others, so the Paul Bunyan is excluded from trend analyses when the surveys are a basis for the trend.

Table 1

Comparable state trail studies conducted from 1996-98 to 2007-13

Trail and comparable segment(s) between studies	First study year	Second study year	Miles of comparable trail	Comments
Paul Bunyan, Baxter to Hackensack	1996	2007	48.2	1996 trail-user surveys not comparable to other studies
Douglas, Rochester to Pine Island	1997	2009	12.5	
Root River & Harmony-Preston Valley, Fountain to Preston and Isinours to Money Creek Woods	1997	2008-09	40.8	
Heartland, Park Rapids to Walker	1998	2007-08	27.3	
Paul Bunyan State Trail Near Lake Bemidji State Park, Mississippi River to northern terminus	1998	2009	5.3	
Luce Line, Plymouth to Winsted	1998	2011-12	29.0	
Glacial Lakes, Willmar to Hawick	1998	2012	18.0	
Sakatah Singing Hills, Mankato to Faribault	1998	2013	38.0	
Total miles			*219.1*	

The eight trails in Table 1 have a total of 793 nominal one-hour trail segment counts in the 1990s, and 792 counts in the recent set of studies. For the seven trails with surveys for trend analyses, there are 1946 returned surveys in the 1990s and 1753 in the 2007-13 studies. The survey return rate in the 1990s is 69 percent, and is 78 percent in the recent set of studies. These return rates are sufficiently high (near 70 percent and above) to allay concerns about nonresponse bias.

The comparison of the trails users with the general Minnesota population is based on all the trail studies conducted from 2007 to 2013. This includes the eight trails in Table 1, plus the Gitchi Gami and Central Lakes. These ten trails have a total of 2565 returned user surveys; the survey return rate is 79 percent, which again is sufficiently high to allay concerns about nonresponse bias.

CHARACTERISTICS OF PAVED STATE BICYCLE TRAIL USERS

A demographic description of state bicycle trail users is formed by comparing the users from Minnesota to the general Minnesota population (Reference 5). Minnesotans make up the large majority (83%) of use of the ten trails studied between 2007 and 2013 that are the basis for the population comparison.

Minnesota bicycle trails draw substantially from all age groups (Table 2), similar to Minnesota state park visitors (Reference 4). Some age groups, however, are over- and under-represented. The one over-represent group is Minnesota trail users in the 41 to 65 age range; they comprise one-third of the general population and just over half of trail users. All other age classes are under-represented. Young adults (40 and younger) and children are under-represented; they comprise 55 percent of the general population and 40 percent of trail users. Older adults (over 65) are under-represented, too.

Trail users from Minnesota are an even mix of females and males, same as the general population, and similar to Minnesota state park visitors.

The large majority of Minnesota trail users — as with Minnesota State Park visitors — are non-Hispanic whites (97%). Few users (3%) are non-white and/or Hispanic, while the Minnesota population has 17% in this race and ethnicity category. On a per-capita basis, the non-white and/or Hispanic populations (as a group) are under-represented in trail users by a factor of six.

As noted in the introduction, one of the major challenges facing the future of nature-based recreation participation, including state trail and park use, is the relatively low participation of non-white and/or Hispanic populations. Participation is concentrated in the non-Hispanic white population. The non-Hispanic white population showed little growth over the last 10 years in Minnesota and nationwide

Table 2

Demographic characteristics of Minnesotans who use state trails in the ten studies from 2007 to 2013

(Notes: Minnesotans account for 83 percent of the use of the ten trails. Restricted to party sizes of 10 or less, due to the statistical impact of a few very large groups on age distribution. Minnesota population characteristics data from U.S. Census Bureau, 2010.)

Characteristic	MN Trail users (percent)	MN population, 2010 (percent)
A. Age Class (all trail users)		
Children (under 13)	12%	17%
Teens (13 to 18)	6%	8%
Adults (19 to 40)	22%	29%
Adults (41 to 65)	51%	33%
Adults (over 65)	9%	12%
Total	100%	100%
Median age	*46.5*	*37.4*
B. Gender (survey respondent)		
Female	50%	50%
Male	50%	50%
Total	100%	100%
C. Race and ethnicity (survey respondent)		
White, Non-Hispanic/Latino	97%	83%
Non-white and/or Hispanic/Latino	3%	17%
Total	100%	100%
D. Educational attainment (age 25+) (survey respondent)		
High school graduate or higher	99%	92%
Bachelor's degree or higher	63%	32%
Postgraduate degree(s)	22%	10%
E. Household income (survey respondent)		
under $30,000	9%	26%
$30,000 to $39,999	7%	10%
$40,000 to $49,999	8%	9%
$50,000 to $59,999	11%	8%
$60,000 to $74,999	15%	11%
$75,000 to $99,999	19%	14%
over $100,000	33%	21%
Total	100%	100%
Median income	*Near $75,000*	*$55,459*

(Table 3), a trend that is expected to continue, according to a recent population projections from the U.S. Census Bureau (Reference 6). These population trends, in conjunction with the recreation-participation patterns by race and ethnicity, will increase the difficulty of maintaining and expanding nature-based activities.

Table 3

Changing racial and ethnical composition of population in Minnesota and U.S., 2000 to 2010

(Source: U.S. Bureau of the Census)

Race & ethnicity	Population 2000	Population 2010	**Numerical change**	**Percent change**
Minnesota				
White, non-Hispanic	4,337,143	4,405,142	**67,999**	**2%**
Non-white and/or Hispanic	582,336	898,783	**316,447**	**54%**
Total	4,919,479	5,303,925	**384,446**	**8%**
U. S.				
White, non-Hispanic	194,552,774	196,817,552	**2,264,778**	**1%**
Non-white and/or Hispanic	86,869,132	111,927,986	**25,058,854**	**29%**
Total	281,421,906	308,745,538	**27,323,632**	**10%**

Minnesota trail users (25 years old or older) are well educated, similar to Minnesota state park visitors (Reference 4). Nearly two-thirds (63%) have at least a bachelor's degree, which is twice as high as the general population. Also twice as high is the prevalence of postgraduate degrees among trail users.

Lastly, Minnesota trail users have higher annual household incomes (median near $75,000) than the general population (median near $55,000), which is consistent with higher educational attainment. This same income pattern was found for Minnesota state park visitors.

TRENDS IN PAVED STATE BICYCLE TRAIL USE

Total trail use

On the eight trails with trend information, overall use is down sharply (about 30%) from the 1990s (Table 4). Most of the eight trails (five) experienced a statistically significant decline in use, two experienced no change, and one had an increase.

The two trails that predominately served local markets in the 1990s experienced stable to growing use (Douglas, and Luce Line — see Table 5). In contrast, all three tourist-oriented trails in the 1990s experienced sizable decreases in use (Paul Bunyan, Heartland, and Root River & Harmony Preston Valley). Trail use from local populations (as shown in the distance traveled section below) has been the most resilient over time. Use declines are concentrated in the longer-distance travel markets. Trail use, it appears, is not as prevalent in the mix of tourist-recreation activities as it was in the past.

Table 4

Summer* Use Trends on State Trails

Trail, study years, and comparable segment	**First study** Total summer user hours	**Second study** Total summer user hours	Percent change	Standardized 10-year trend:** Percent change
INCREASE in use; change statistically significant 0.05 probability level				
Douglas, 1997 to 2009, Rochester to Pine Island	45,810	64,869	42%	35%
DECREASE in use; change statistically significant 0.05 probability level				
Paul Bunyan, 1996 to 2007, Baxter to Hackensack	148,760	69,838	-53%	-48%
Heartland, 1998 to 2007-08, Park Rapids to Walker	118,337	60,878	-49%	-54%
Root River & Harmony-Preston Valley (RR & HPV), 1997 to 2008-09, Fountain to Preston and Isinours to Money Creek Woods	178,762	111,580	-38%	-34%
Glacial Lakes, 1998 to 2012, Willmar to Hawick	31,707	20,998	-34%	-24%
Sakatah Singing Hills, 1998 to 2013, Mankato to Faribault	89,633	62,888	-30%	-20%
NO CHANGE in use; change not statistically significant 0.05 probability level				
Paul Bunyan State Trail Near Lake Bemidji State Park, 1998 to 2009, Mississippi River to northern terminus	17,488	14,524	-17%	-15%
Luce Line, 1998 to 2011, Plymouth to Winsted	61,047	65,733	8%	6%
Total	691,544	471,308	-32%	-30%

* Summer extends from the Saturday of Memorial Day weekend to Labor Day. Because summers vary in length, and because this affects comparability between studies, summer length is set by the second study.

** Assumes the same linear change in user-hours per year.

Table 5

Change in travel characteristics of trail users from 1996-98 to 2007-13

A. Travel characteristics in 1996-98 period

	Tourist trails			*Local-use trails*		*Mix local/tourist trails*		
Trail-use statistic	Paul Bunyan	Heartland	RR-HPV*	Douglas	Luce Line	Glacial Lakes	Sakatah*	PB-BSP*
• Median miles of users from home	(Trail-user surveys not comparable to other studies. Is clearly a tourist trail in the 1990s, as it is today.)	95	105	5	4	15	25	8
• Percent of use from within 10 miles of the trail		25%	6%	80%	72%	48%	40%	56%
• Percent of use from over 50 miles of the trail		65%	71%	8%	2%	24%	23%	29%

B. Travel characteristics in 2007-13 period

	Tourist trails			*Local-use trails*				
Trail-use statistic	Paul Bunyan	Heartland	RR-HPV*	Douglas	Luce Line	Glacial Lakes	Sakatah*	PB-BSP*
• Median miles of users from home	120	125	120	3	4	4	6	5
• Percent of use from within 10 miles of the trail	33%	29%	9%	83%	80%	71%	60%	71%
• Percent of use from over 50 miles of the trail	59%	62%	70%	7%	3%	17%	19%	21%

* RR-HPV, Root River and Harmony-Preston Valley Trail
* Sakatah, Sakatah Singing Hills Trail
* PB-BSP, Paul Bunyan segment near Lake Bemidji State Park and city of Bemidji

Three other trails (Glacial Lakes, Sakatah Singing Hills, and Paul Bunyan segment near Bemidji) served a mix of tourists and locals in the 1990s (Table 5). All experienced declines in their longer-distance markets, which led to overall declines in use on two of the trails (Glacial Lakes and Sakatah), but produced no statistically significant change in use on the other (Paul Bunyan segment near Bemidji). All three trails are now classified as predominately local-market trails.

Trail activity

For trail activities, the decreases are largest for biking and skating, with pedestrian activities (walking/hiking and running/jogging) experiencing stable to growing use over time (Table 6). Biking is the main trail activity (now and in the past) and its decrease leads overall trail use down. Skating is a secondary trail activity that is down sharply, due mostly to the decline in popularity of the sport. Compared with biking, the pedestrian activities may be more a part of a routine lifestyle, less recreationally and more utilitarian oriented ("utilitarian" in the sense, for example, of

Table 6

Change in summer trail use by activity
(compares eight trails over time; use figures are based on counting portion of trail studies)

Category of trail use	First period 1996-98	Second period 2007-13	Change in value from first to second period
A. Profile of use (percent of total)			
Trail Activity			
Biking	75%	67%	-8%
Skating	7%	3%	-4%
Walking	14%	21%	8%
Running	2%	6%	4%
Other (including horse)	1%	2%	1%
Total percent	100%	100%	0%
Walking/running subtotal	*16%*	*28%*	*12%*
B. Hours of use			
Trail Activity			
Biking	521,186	317,318	-203,868
Skating	51,610	13,997	-37,614
Walking	95,097	101,005	5,908
Running	16,667	29,422	12,755
Other (including horse)	6,984	9,567	2,583
Total hours	691,544	471,308	-220,236
Walking/running subtotal	*111,764*	*130,427*	*18,663*

exercising and dog walking). They are mainly done near home, and they are the drivers in the near-home trail market resilience over time.

This general pattern of activity change is found on nearly all the trails individually (Table A-1 in Appendix A), providing evidence of the broad basis of the changes. Further evidence of the broadness of the changes comes from national participation data available from the NSGA (Reference 7). National trends from the mid 1990s show increasing pedestrian activity (walking/hiking/running/jogging), decreasing skating, and decreasing biking, although biking is relatively stable over the last decade (Figure A-1 in Appendix A).

Day of week of trail use

The overall trail declines are concentrated on weekends/holidays (Table 7). This pattern of change seems consistent with the trend toward more utilitarian-oriented activities that are done close to home on a daily basis. There are, of course, more weekdays than weekend days available for routine daily activities.

Table 7

Change in summer trail use by day of week
(compares eight trails over time; use figures are based on counting portion of trail studies)

Category of trail use	First period 1996-98	Second period 2007-13	Change in value from first to second period
A. Profile of use (percent of total)			
Day of Week			
Weekend/Holidays	52%	46%	-6%
Weekdays	48%	54%	6%
Total percent	100%	100%	0%
B. Hours of use			
Day of Week			
Weekend/Holidays	362,399	219,130	-143,269
Weekdays	329,145	252,179	-76,966
Total hours	691,544	471,308	-220,236

This general pattern of day-of-week change is found on nearly all the trails individually (Table A-2 in Appendix A), providing evidence of the broad nature of the changes.

Distance traveled from home to trail

As noted above, the local trail market is the most stable over time, while the longer travel-distance markets are in decline (Table 8). In fact, user hours in the local market grew over time, in spite of the overall decline in trail use. This local-market growth roughly matches the population growth of the cities and towns in which the trails are located, meaning that per-capita trail use is largely stable in the local market over time.

Table 8

Change in summer trail use by travel distance from home

(compares seven trails over time; use figures are based on counting and survey portion of trail studies)

Category of trail use	First period 1997-98	Second period 2007-13	Change in value from first to second period
A. Profile of use (percent of total)			
Miles from home			
10 miles or less	34%	49%	15%
10.1 to 50 miles	22%	16%	-6%
50.1 to 100 miles	15%	8%	-7%
over 100 miles	30%	27%	-3%
Total percent	100%	100%	0%
B. Hours of use			
Miles from home			
10 miles or less	182,006	196,442	14,437
10.1 to 50 miles	118,148	63,935	-54,214
50.1 to 100 miles	80,910	33,440	-47,470
over 100 miles	161,720	107,653	-54,067
Total hours	542,784	401,470	-141,314
C. Median miles of travel by trail activity			
Median miles from home			
All activities	40	12	-28
Biking	70	40	-30
Walking/running	3	2	-1

Consistent with the rise in the near-home market and fall in the away-from-home market, the median distance traveled by trail users declined from the 1990s to 2007-13 (Table 8). Biking median travel distance declined sharply, while the pedestrian activities (walking/running) remained predominately near home in both study periods. The growth of the pedestrian activities (Table 6) helped fuel the near-home market growth.

This general pattern of travel-distance change (near-home market growing) is found on all the trails individually (Table A-3 in Appendix A), providing evidence of the broad basis of the change.

Age of trail users

With respect to age, the trends show a shift in trail use from younger adults, teens and children to older adults (Table 9). The portion of trail use accounted for by younger users (40 and under) fell from about half (51%) to 37 percent between the 1990s and 2007-13, while older users (over 40) increased their share of use from about half to 63 percent. As a result of these age-class shifts, the median age of trail users increased 7.4 years from 1997-98 to 2007-13, which is a relatively rapid aging of the trail users (for perspective, the median age of the Minnesota population increased 2.6 years over this period).

This general pattern of age change is found regularly on all the trails individually (Table A-4 in Appendix A), indicating that the change is of a general nature. All the trails have a decreasing proportion of use from people 40 and younger, and an increasing portion from those over 40. All but one trail has a median age increase that exceeds the Minnesota population increase of 2.6 years.

The aging of the trail participant population can be put into sharper perspective by comparing Minnesota trail participants to the Minnesota population. Minnesota trail users 40 and under made up 52 percent of trail use in the 1990s, and this fell to 38 percent in the recent studies, a decline of 14 percentage points (Table 10, part A). Over the same period, the portion of the Minnesota population in the 40-and-under age group declined just 6 percentage points, which means the participant population is growing older more rapidly than the general population. The median age of Minnesota trail users increased 7.0 years between the study periods, a much larger increase than the general population increase of 2.6 years (Table 10, part B).

Table 9

Change in summer trail use by age class for all users

(compares seven trails over time; use figures are based on counting and survey portion of trail studies; restricted to party sizes of 10 or less, due to the statistical impact of a few very large groups on age distribution)

Category of trail use	First period 1997-98	Second period 2007-13	Change in value from first to second period
A. Profile of use (percent of total)			
Age class			
Children (under 13)	15%	11%	-4%
Teens (13 to 18)	7%	4%	-3%
Adults (19 to 40)	29%	22%	-7%
Adults (41 to 65)	42%	54%	11%
Adults (over 65)	6%	10%	3%
Total percent	100%	100%	0%
Subtotal for 40 and under	*51%*	*37%*	*-15%*
Subtotal for over 40	*49%*	*63%*	*15%*
B. Hours of use			
Age class			
Children (under 13)	83,150	45,546	-37,604
Teens (13 to 18)	37,318	14,331	-22,987
Adults (19 to 40)	157,817	86,889	-70,928
Adults (41 to 65)	230,403	215,633	-14,770
Adults (over 65)	34,098	39,071	4,973
Total hours	542,787	401,469	-141,317
Subtotal for 40 and under	*278,285*	*146,765*	*-131,520*
Subtotal for over 40	*264,501*	*254,704*	*-9,797*
C. Median age of user			
Median age (in years)	40.3	47.7	7.4

Table 10

Change in summer trail use by age class for users from Minnesota

(compares seven trails over time; use figures are based on counting and survey portion of trail studies; restricted to party sizes of 10 or less, due to the statistical impact of a few very large groups on age distribution)

Note: Minnesotans account for 80 to 83 percent of total use on these seven trails

Category of trail use	First period 1997-98	Second period 2007-13	Change in value from first to second period
A. Profile (percent of total)			
Age class of trail user			
Children (under 13)	15%	12%	-3%
Teens (13 to 18)	7%	4%	-3%
Adults (19 to 40)	30%	22%	-8%
Adults (41 to 65)	42%	53%	11%
Adults (over 65)	7%	9%	3%
Total percent	100%	100%	0%
Subtotal for 40 and under	*52%*	*38%*	*-14%*
Subtotal for over 40	*48%*	*62%*	*14%*
Age class of Minnesota population in 1998 and 2010			
Children (under 13)	19%	17%	-1%
Teens (13 to 18)	10%	8%	-1%
Adults (19 to 40)	32%	29%	-3%
Adults (41 to 65)	28%	33%	5%
Adults (over 65)	12%	12%	0%
Total percent	100%	100%	0%
Subtotal for 40 and under	*60%*	*55%*	*-6%*
Subtotal for over 40	*40%*	*45%*	*6%*
B. Median age			
Trail users	40.2	47.2	7.0
Minnesota population in 1998 and 2010	34.8	37.4	2.6
C. Hours of use and number of Minnesotans			
Hours of use by age class of trail user			
Children (under 13)	67,560	40,499	-27,061
Teens (13 to 18)	29,802	12,572	-17,230
Adults (19 to 40)	128,792	72,258	-56,534
Adults (41 to 65)	181,725	175,489	-6,235
Adults (over 65)	28,476	30,739	2,263
Total hours	436,355	331,559	-104,797
Subtotal for 40 and under	*226,154*	*125,330*	*-100,824*
Subtotal for over 40	*210,201*	*206,229*	*-3,973*
Number of Minnesotans by age class in 1998 and 2010			
Children (under 13)	900,915	922,119	21,204
Teens (13 to 18)	457,549	436,603	-20,946
Adults (19 to 40)	1,542,607	1,544,722	2,115
Adults (41 to 65)	1,349,308	1,760,532	411,224
Adults (over 65)	563,033	639,949	76,916
Total population	4,813,412	5,303,925	490,513
Subtotal for 40 and under	*2,901,071*	*2,903,444*	*2,373*
Subtotal for over 40	*1,912,341*	*2,400,481*	*488,140*

In terms of the age-class shift of hours of trail use, the hour declines are largest in the younger age classes, and least in the older age classes, with the oldest age class (over 65) even showing a small increase (Table 10, part C). These hour shifts are difficult to interpret, however, because of the corresponding shifts in the underlying population, which — for example — is growing rapidly in the older age classes that have the least decline in trail use.

To facilitate the interpretation of hours of trail use relative to population, the trend analysis is performed on a per-capita basis, with trail-use hours by age class normalized by population in each study period. The resulting per-capita age-class trends are all negative, even for the oldest age class (Table 11). The younger age classes have the steepest declines, with declines of over 40 percent for younger adults (40 and younger), teens, and children. When combined together, those 40 and under have a per-capita decline of 45 percent, about twice as large as the 22 percent decline for those over 40.

Table 11

Per-capita change in summer trail use by age class for users from Minnesota

(compares seven trails over time; use figures are based on counting and survey portion of trail studies; restricted to party sizes of 10 or less, due to the statistical impact of a few very large groups on age distribution)

Note: Minnesotans account for 80 to 83 percent of total use on these seven trails

Age class	First period 1997-98 (hours per capita*)	Second period 2007-13 (hours per capita*)	Percent change from first to second period
Children (under 13)	75	44	-41%
Teens (13 to 18)	65	29	-56%
Adults (19 to 40)	83	47	-44%
Adults (41 to 65)	135	100	-26%
Adults (over 65)	51	48	-5%
Total	91	63	-31%
Subtotal for 40 and under	*78*	*43*	*-45%*
Subtotal for over 40	*110*	*86*	*-22%*

* Table values are: hours of trail use from Minnesotans per 1000 Minnesotans in 1998 and 2010

As discussed in the introduction to this report, one of the two major challenges facing future participation in nature-based recreation is the decline in involvement of young adults (under age 45) and children. Referred to as the "generational challenge", the preceding age-class discussion shows how the use of state bicycle trails fit into this challenge. Additionally fitting into this challenge — and also discussed in the introduction — are visitors to Minnesota state parks, as well as participants in activities like fishing, boating, hunting, snowmobiling, and nature observation.

REFERENCES

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6. U. S. Department of Commerce, Census Bureau. 2012 National Population Projections. NP2012_D1. Projected Population by Single Year of Age, Sex, Race, and Hispanic Origin for the United States: July 1, 2012 to July 1, 2060.

7. National Sporting Goods Association (NSGA). The NSGA website (www.nsga.org) provided activity trend data for the U.S., based on its annual household survey. The information was free for downloading, and was assembled from the website over the last 10 to 15 years. Free information of this sort no longer appears to be available from the website, but the information is available for sale through the website.

APPENDIX A

Detailed tables and graphs referred to in body of report

Table A-1

Change, by trail, in profile of summer trail use by trail activity

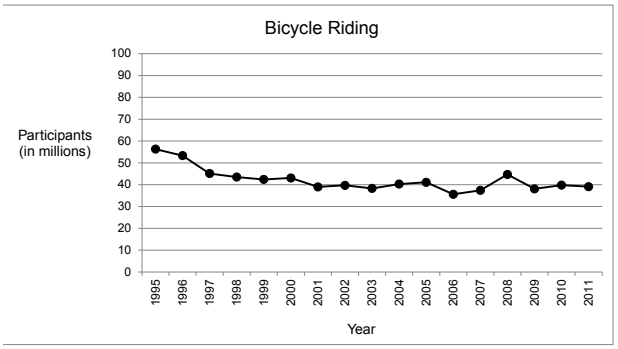
(compares eight trails over time; use figures are based on counting portion of trail studies)

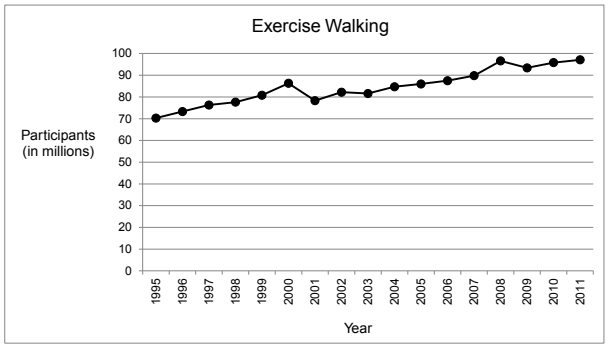
Trail	First period 1996-98	Second period 2007-13	Change in value from first to second period
All eight trails combined			
Trail activity			
Biking	75%	67%	-8%
Skating	7%	3%	-4%
Walking	14%	21%	8%
Running	2%	6%	4%
Other (including horse)	1%	2%	1%
Total percent	100%	100%	0%
Walking/running subtotal	*16%*	*28%*	*12%*
Paul Bunyan, 1996 to 2007			
Trail activity			
Biking	72%	64%	-8%
Skating	15%	7%	-8%
Walking	11%	24%	12%
Running	2%	5%	3%
Other (including horse)	0%	1%	1%
Total percent	100%	100%	0%
Walking/running subtotal	*13%*	*28%*	*16%*
Heartland, 1998 to 2007-08			
Trail activity			
Biking	79%	68%	-11%
Skating	6%	4%	-2%
Walking	14%	21%	6%
Running	1%	3%	2%
Other (including horse)	0%	5%	4%
Total percent	100%	100%	0%
Walking/running subtotal	*15%*	*24%*	*8%*
Root River & Harmony-Preston Valley, 1997 to 2008-09			
Trail activity			
Biking	91%	89%	-2%
Skating	3%	1%	-2%
Walking	6%	10%	4%
Running	0%	1%	1%
Other (including horse)	1%	0%	0%
Total percent	100%	100%	0%
Walking/running subtotal	*6%*	*11%*	*4%*
Douglas, 1997 to 2009			
Trail activity			
Biking	60%	55%	-6%
Skating	6%	4%	-2%
Walking	26%	28%	2%
Running	6%	13%	7%
Other (including horse)	2%	0%	-2%
Total percent	100%	100%	0%
Walking/running subtotal	*32%*	*41%*	*9%*
Paul Bunyan State Trail segment near Bemidji, 1998 to 2009			
Trail activity			
Biking	47%	56%	9%
Skating	24%	9%	-15%
Walking	22%	23%	1%
Running	5%	4%	0%
Other (including horse)	2%	8%	6%
Total percent	100%	100%	0%
Walking/running subtotal	*27%*	*28%*	*0%*
Luce Line, 1998 to 2011			
Trail activity			
Biking	59%	46%	-12%
Skating	----	----	----
Walking	28%	34%	5%
Running	9%	15%	6%
Other (including horse)	4%	5%	1%
Total percent	100%	100%	0%
Walking/running subtotal	*37%*	*49%*	*12%*
Glacial Lakes, 1998 to 2012			
Trail activity			
Biking	61%	71%	10%
Skating	15%	5%	-11%
Walking	17%	20%	3%
Running	5%	4%	-1%
Other (including horse)	2%	0%	-2%
Total percent	100%	100%	0%
Walking/running subtotal	*22%*	*24%*	*3%*
Sakatah Singing Hills, 1998 to 2013			
Trail activity			
Biking	76%	69%	-7%
Skating	7%	2%	-4%
Walking	13%	21%	8%
Running	3%	6%	3%
Other (including horse)	1%	2%	1%
Total percent	100%	100%	0%
Walking/running subtotal	*16%*	*27%*	*11%*

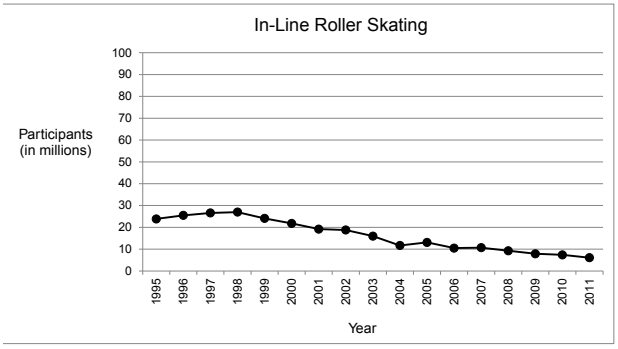
Figure A-1

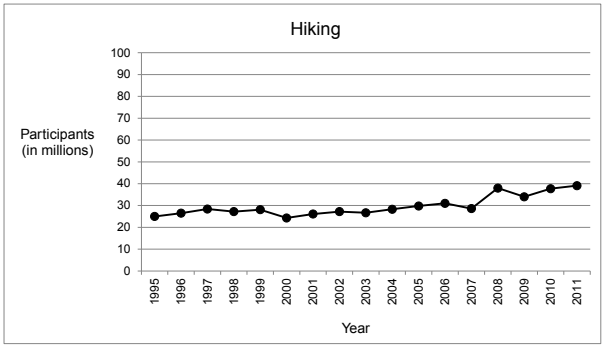
Trail-related activity trends in the U.S., 1995 to 2011

NOTE: Participated more than once (in millions). Seven (7) years of age and older. Activities can be conducted both outdoors and indoors.
Source: National Sporting Goods Association.









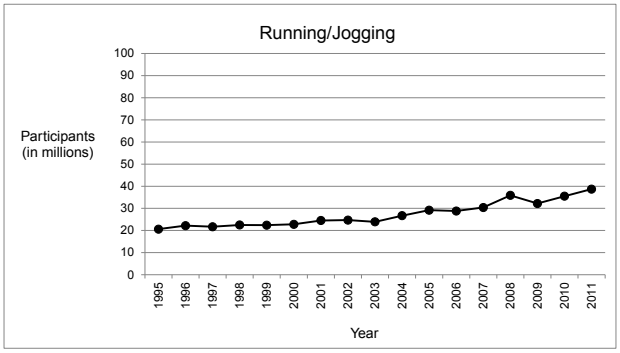


Table A-2

Change, by trail, in profile of summer trail use by day of week

(compares eight trails over time; use figures are based on counting portion of trail studies)

Trail	First period 1996-98	Second period 2007-13	Change in value from first to second period
All eight trails combined			
Day of week			
Weekend/Holidays	52%	46%	-6%
Weekdays	48%	54%	6%
Total percent	100%	100%	0%
Paul Bunyan, 1996 to 2007			
Day of week			
Weekend/Holidays	49%	42%	-7%
Weekdays	51%	58%	7%
Total percent	100%	100%	0%
Root River & Harmony-Preston Valley, 1997 to 2008-09			
Day of week			
Weekend/Holidays	62%	53%	-9%
Weekdays	38%	47%	9%
Total percent	100%	100%	0%
Paul Bunyan State Trail segment near Bemidji, 1998 to 2009			
Day of week			
Weekend/Holidays	44%	57%	12%
Weekdays	56%	43%	-12%
Total percent	100%	100%	0%
Glacial Lakes, 1998 to 2012			
Day of week			
Weekend/Holidays	44%	42%	-2%
Weekdays	56%	58%	2%
Total percent	100%	100%	0%

Trail	First period 1996-98	Second period 2007-13	Change in value from first to second period
Heartland, 1998 to 2007-08			
Day of week			
Weekend/Holidays	50%	38%	-12%
Weekdays	50%	62%	12%
Total percent	100%	100%	0%
Douglas, 1997 to 2009			
Day of week			
Weekend/Holidays	46%	43%	-2%
Weekdays	54%	57%	2%
Total percent	100%	100%	0%
Luce Line, 1998 to 2011			
Day of week			
Weekend/Holidays	53%	49%	-4%
Weekdays	47%	51%	4%
Total percent	100%	100%	0%
Sakatah Singing Hills, 1998 to 2013			
Day of week			
Weekend/Holidays	51%	47%	-4%
Weekdays	49%	53%	4%
Total percent	100%	100%	0%

Table A-3

Change, by trail, in profile of summer trail use by miles traveled from home

(compares seven trails over time; use figures are based on counting and survey portion of trail studies)

Trail	First period 1997-98	Second period 2007-13	Change in value from first to second period
All seven trails combined			
Miles from home			
10 miles or less	34%	49%	15%
10.1 to 50 miles	22%	16%	-6%
50.1 to 100 miles	15%	8%	-7%
over 100 miles	30%	27%	-3%
Total percent	100%	100%	0%
Median miles from home	40	12	-28
Root River & Harmony-Preston Valley, 1997 to 2008-09			
Miles from home			
10 miles or less	6%	9%	3%
10.1 to 50 miles	23%	21%	-2%
50.1 to 100 miles	21%	12%	-9%
over 100 miles	50%	58%	8%
Total percent	100%	100%	0%
Median miles from home	105	120	15
Paul Bunyan State Trail segment near Bemidji, 1998 to 2009			
Miles from home			
10 miles or less	56%	71%	15%
10.1 to 50 miles	15%	8%	-7%
50.1 to 100 miles	2%	4%	2%
over 100 miles	28%	18%	-10%
Total percent	100%	100%	0%
Median miles from home	8	5	-3
Glacial Lakes, 1998 to 2012			
Miles from home			
10 miles or less	48%	71%	23%
10.1 to 50 miles	29%	12%	-16%
50.1 to 100 miles	15%	9%	-6%
over 100 miles	9%	8%	0%
Total percent	100%	100%	0%
Median miles from home	15	4	-11

Trail	First period 1997-98	Second period 2007-13	Change in value from first to second period
Heartland, 1998 to 2007-08			
Miles from home			
10 miles or less	25%	29%	4%
10.1 to 50 miles	10%	9%	0%
50.1 to 100 miles	20%	8%	-12%
over 100 miles	45%	54%	9%
Total percent	100%	100%	0%
Median miles from home	95	125	30
Douglas, 1997 to 2009			
Miles from home			
10 miles or less	80%	83%	4%
10.1 to 50 miles	13%	10%	-3%
50.1 to 100 miles	4%	4%	0%
over 100 miles	4%	3%	-1%
Total percent	100%	100%	0%
Median miles from home	5	3	-2
Luce Line, 1998 to 2011			
Miles from home			
10 miles or less	72%	80%	8%
10.1 to 50 miles	26%	18%	-8%
50.1 to 100 miles	0%	2%	2%
over 100 miles	2%	1%	-1%
Total percent	100%	100%	0%
Median miles from home	4	4	0
Sakatah Singing Hills, 1998 to 2013			
Miles from home			
10 miles or less	40%	60%	20%
10.1 to 50 miles	37%	21%	-16%
50.1 to 100 miles	14%	13%	-1%
over 100 miles	9%	6%	-3%
Total percent	100%	100%	0%
Median miles from home	25	6	-19

Table A-4

Change, by trail, in profile of summer trail use by age class for all users

(compares seven trails over time; use figures are based on counting and survey portion of trail studies; restricted to party sizes of 10 or less, due to the statistical impact of a few very large groups on age distribution)

Trail	First period 1997-98	Second period 2007-13	Change in value from first to second period
All seven trails combined			
Age class			
Children (under 13)	15%	11%	-4%
Teens (13 to 18)	7%	4%	-3%
Adults (19 to 40)	29%	22%	-7%
Adults (41 to 65)	42%	54%	11%
Adults (over 65)	6%	10%	3%
Total percent	100%	100%	0%
Subtotal for 40 and under	*51%*	*37%*	*-15%*
Subtotal for over 40	*49%*	*63%*	*15%*
Median age (in years)	40.3	47.7	7.4
Heartland, 1998 to 2007-08			
Age class			
Children (under 13)	18%	10%	-8%
Teens (13 to 18)	10%	4%	-6%
Adults (19 to 40)	24%	20%	-4%
Adults (41 to 65)	39%	55%	16%
Adults (over 65)	8%	11%	2%
Total percent	100%	100%	0%
Subtotal for 40 and under	*53%*	*34%*	*-19%*
Subtotal for over 40	*47%*	*66%*	*19%*
Median age (in years)	39.7	46.5	6.8
Root River & Harmony-Preston Valley, 1997 to 2008-09			
Age class			
Children (under 13)	12%	9%	-3%
Teens (13 to 18)	4%	3%	-1%
Adults (19 to 40)	31%	21%	-9%
Adults (41 to 65)	48%	59%	11%
Adults (over 65)	6%	8%	3%
Total percent	100%	100%	0%
Subtotal for 40 and under	*47%*	*33%*	*-14%*
Subtotal for over 40	*53%*	*67%*	*14%*
Median age (in years)	42.7	50.8	8.1
Douglas, 1997 to 2009			
Age class			
Children (under 13)	18%	13%	-5%
Teens (13 to 18)	7%	5%	-3%
Adults (19 to 40)	34%	31%	-3%
Adults (41 to 65)	37%	44%	7%
Adults (over 65)	4%	8%	4%
Total percent	100%	100%	0%
Subtotal for 40 and under	*59%*	*48%*	*-11%*
Subtotal for over 40	*41%*	*52%*	*11%*
Median age (in years)	38.1	42.7	4.6
Paul Bunyan State Trail segment near Bemidji, 1998 to 2009			
Age class			
Children (under 13)	18%	16%	-2%
Teens (13 to 18)	10%	10%	0%
Adults (19 to 40)	37%	33%	-4%
Adults (41 to 65)	33%	35%	2%
Adults (over 65)	3%	6%	3%
Total percent	100%	100%	0%
Subtotal for 40 and under	*64%*	*60%*	*-5%*
Subtotal for over 40	*36%*	*40%*	*5%*
Median age (in years)	34.6	32.9	-1.7
Luce Line, 1998 to 2011			
Age class			
Children (under 13)	12%	14%	2%
Teens (13 to 18)	5%	3%	-2%
Adults (19 to 40)	33%	16%	-17%
Adults (41 to 65)	42%	60%	18%
Adults (over 65)	7%	7%	0%
Total percent	100%	100%	0%
Subtotal for 40 and under	*51%*	*33%*	*-17%*
Subtotal for over 40	*49%*	*67%*	*17%*
Median age (in years)	40.7	49.3	8.7
Glacial Lakes, 1998 to 2012			
Age class			
Children (under 13)	28%	10%	-18%
Teens (13 to 18)	8%	4%	-4%
Adults (19 to 40)	26%	24%	-2%
Adults (41 to 65)	37%	52%	15%
Adults (over 65)	2%	11%	9%
Total percent	100%	100%	0%
Subtotal for 40 and under	*61%*	*37%*	*-24%*
Subtotal for over 40	*39%*	*63%*	*24%*
Median age (in years)	36.8	50.8	14.0
Sakatah Singing Hills, 1998 to 2013			
Age class			
Children (under 13)	14%	13%	-2%
Teens (13 to 18)	8%	2%	-5%
Adults (19 to 40)	27%	17%	-10%
Adults (41 to 65)	44%	51%	7%
Adults (over 65)	8%	17%	9%
Total percent	100%	100%	0%
Subtotal for 40 and under	*49%*	*32%*	*-17%*
Subtotal for over 40	*51%*	*68%*	*17%*
Median age (in years)	41.5	53.7	12.2